

ABSTRACT OF THE DISCLOSURE

The present invention provides a method for producing a magnetoresistive element including a tunnel insulating layer, and a first magnetic layer and a second magnetic layer that are laminated so as to sandwich the tunnel insulating layer, wherein a resistance value varies depending on a relative angle between magnetization directions of the first magnetic layer and the second magnetic layer. The method includes the steps of: (i) laminating a first magnetic layer, a third magnetic layer and an Al layer successively on a substrate; (ii) forming a tunnel insulating layer containing at least one compound selected from the group consisting of an oxide, nitride and oxynitride of Al by performing at least one reaction selected from the group consisting of oxidation, nitriding and oxynitriding of the Al layer; and (iii) forming a laminate including the first magnetic layer, the tunnel insulating layer and a second magnetic layer by laminating the second magnetic layer in such a manner that the tunnel insulating layer is sandwiched by the first magnetic layer and the second magnetic layer. The third magnetic layer has at least one crystal structure selected from the group consisting of a face-centered cubic crystal structure and a face-centered tetragonal crystal structure and is (111) oriented parallel to a film plane of the third magnetic layer. According to this production method, it is possible to produce a magnetoresistive element with excellent properties and thermal stability.